REMARKS/ARGUMENTS

Status of the claims

Claims 1 to 9, 11, 17 to 25 and 27 have been maintained in the application. Claims 10, 12, 26 and 28 to 32 are still considered withdrawn.

Claim Amendments

Claim 1 has been amended to recite:

> A method for co-modelling a simulated packet network and a simulated optical network over which the simulated packet network operates on a computer comprising a processor and a computer-readable medium storing computer executable instructions for co-modelling the simulated packet network and the simulated optical network, the simulated packet network representing a plurality of packet links between packet network nodes and the simulated optical network representing a plurality of optical links between optical network nodes, the method comprising the steps of:
>
> (1) the processor generating a basic packet capacity comprising a capacity value for each packet link based on packet network topology information and packet traffic information; and
>
> (2) the processor generating a basic optical capacity comprising a capacity value for each optical link based on optical network topology information and the basic packet capacity, wherein the combination of the basic packet capacity and the basic optical capacity applied to the simulated packet network and a simulated optical network produce a co-modelled simulated packet transport network.

Claim 8 has been similarly amended with a further amendment that recites "the processor performing analysis on the ~~simulated packet network and the simulated optical network over which the simulated packet network operates~~ co-modelled simulated packet transport network".

Claims 17 and 24 have also been amended to recite the limitation "wherein the combination of the basic packet capacity and the basic optical capacity applied to the simulated packet network and a simulated optical network produce a co-modelled simulated packet transport network".

Claims 2, 4 to 7, 9 and 11 have been amended to recite the processor performing steps recited in claims 1 and 8 and additional steps in the respective claims.

Claims 3 and 19 have been amended to recite "supplying to" and "receiving" "at the processor", respectively.

Claims 5 and 21 have been amended to clarify that "packet network engineering guidelines pertain to average occupancy of the respective packet links".

Claims 6, 7, 22 and 23 have been amended to clarify that "optical network engineering guidelines pertain to occupancy of the respective optical links".

Claim Rejections – 35 U.S.C. Section 101

In paragraph 3 of the detailed action, claims 1 to 9, 11, 17 and 24 are rejected under 35 U.S.C. 101 because they are alleged to be directed to non-statutory subject matter.

The Examiner alleges that the process must be tied to another statutory class or transform underlying subject matter to a different state or thing.

The Examiner has alleged that claim 1 and 8 are not tied to an apparatus and further alleges that the steps could be provided by a mental step.

With regard to claims 1 and 8, the claims have been amended to recite "A method for co-modelling a simulated packet network and a simulated optical network over which the simulated packet network operates on a computer comprising a processor and a computer-readable medium storing computer executable instructions for co-modelling the simulated packet network and the simulated optical network" and that the steps are performed by the processor. Applicant submits that the claimed methods are clearly tied to another statutory class and as such is statutory subject matter. Applicant submits that the processor when programmed with the "computer

executable instructions for co-modelling the simulated packet network and the simulated optical network" is a special purpose computer as identified in *Ex parte Moyer*, No. 2009-002154 (B.P.A.I. Jan. 20, 2010), which states that "a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software".

Applicant submits that the overall size and nature of the co-modelled make it extremely difficult to consider that the limitations of claims 1 and 8 could be considered as mental steps as alleged by the Examiner.

In regards to claims 2, 3, 4 and 9, with reference to the Examiner's allegation that it is unclear what the "inputs" recited in the claim are input into, Applicant submits that the claims now more clearly recite that the elements recited in the claims are input to the processor.

In regards to claims 5 to 7, 9 and 11, with reference to the Examiner's allegation that it is unclear what apparatus is tied to the method steps, the claims have been amended as described above to more clearly define that the method steps are tied to the processor recited in amended claims 1 and 8.

In regards to claims 1, 8, 11, 17 and 24, with reference to the Examiner's allegation that the claims do not provide the result of the preamble, claims 1, 8, 17 and 24 have been amended to clarify that "combination of the basic packet capacity and the basic optical capacity applied to the simulated packet network and a simulated optical network produce a co-modelled simulated packet transport network". A first step involves the processor generating a basic packet capacity comprising a capacity value for each packet link based on packet network topology information and packet traffic information. A second step involves the processor generating a basic optical capacity comprising a capacity value for each optical link based on optical network topology information and the basic packet capacity. As the second step is dependent upon the output of the first step, and with the additional limitation defining that the "basic packet capacity and the basic optical capacity applied to the simulated packet network and a simulated optical network produce a co-modelled simulated packet transport network", Applicant respectfully submits that claims 1, 8, 11, 17 and 24 provide the result of the preamble.

Applicant submits that method claims 1 to 9, 11, 17 and 24 meet requirements set out by the Examiner to be considered statutory subject matter. Applicant respectfully requests that the Examiner reconsider and withdraw the 35 U.S.C. 101 rejection of claims 1 to 9, 11, 17 and 24.

Claim Rejections – 35 U.S.C. Section 101

In paragraph 4 of the detailed action, claims 5 to 7 and 21 to 23 are rejected under 35 U.S.C. 101 because they are alleged to be directed to non-statutory subject matter as the claims are alleged to provide a concrete result.

Claims 5 to 7 and 21 to 23 have been amended as described above to further define that the packet network engineering guidelines pertain to average occupancy of the respective packet links and the optical network engineering guidelines pertain to occupancy of the respective optical links.

Applicant submits that based on the amendments, the claims more clearly define what is intended by the "engineering guidelines" and as such the guidelines define concrete criteria which would allow the results to be repeatable.

Applicant submits that method claims 5 to 7 and 21 to 23 meet requirements set out by the Examiner to be considered statutory subject matter. Applicant respectfully requests that the Examiner reconsider and withdraw the 35 U.S.C. 101 rejection of claims 5 to7 and 21 to 23.

Claim Rejections – 35 U.S.C. Section 112

In paragraph 6 of the detailed action, the Examiner has rejected claims 2 to 7, 9 and 21 to 23 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The 35 U.S.C 112 rejection of claims 5 to 7 and 21 to 23 and of claims 2 to 4 and 9 substantially correspond to the rejection of the same claims, respectively, as in the 35 U.S.C. 101 rejection. The language used in the claims that results in the 35 U.S.C. 101 rejection is also allegedly cause for the 35 U.S.C 112 rejections.

Based on the amendments made to the claims and for at least the same reasons discussed above with regard to the 35 U.S.C. 101 rejections, Applicant submits that the claims comply with 35 U.S.C. 112, second paragraph.

Claim Rejections – 35 U.S.C. 103

The Examiner has rejected claims 1 to 4, 8, 11, 17 to 20, 24, 25 and 27 under 35 U.S.C. 103(a) as being unpatentable over Rappaport et al. (U.S. Patent Publication 2005/0043933) in view of Ghani *et al.* ("On IP-over WDM Integration", of record).

In rejecting claims under 35 U.S.C. 103(a), the Examiner bears the initial burden of establishing a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). It is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d, 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), *viz.*, (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. Additionally, in making a rejection under 35 U.S.C. 103(a) on the basis of obviousness, the Examiner must provide some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. Co. v. Teleflex Inc.*,127 S.Ct. 1727, 1741 (2007). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the appellant. *See Oetiker*, 977 F.2d at 1445. *See also Piasecki*, 745 F.2d at 1472. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See Oetiker*, 977 F.2d at 1445; *Piasecki*, 745 F.2d at 1472.

Applicant submits that claims 1 to 4, 8, 11, 17 to 20, 24, 25 and 27 of the present application are patentable over Rappaport *et al.* and Ghani *et al.*, as the Examiner has not properly determined the differences between the claimed invention and the prior art. Applicant's reasoning is detailed below.

Differences between the claimed invention and the prior art

The following is a discussion of how the cited references do not disclose all the elements of the rejected claim. While it may be considered that "the mere existence of differences between prior art and an invention does not establish the invention's non-obviousness", Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one skilled in the art (Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in *KSR International Co.* v. *Teleflex Inc.*, published in Federal Register Vol. 72, No. 195 October 10, 2007). As such, if elements from a claim are not disclosed by the combination of cited references and no valid reasoning is provided why the missing elements would be obvious, this may provide a strong basis for why a claim should not be rejected based on obviousness.

The Examiner is citing Rappaport *et al.* for its alleged disclosure of modelling or simulating in order to make predictions about a network. The Examiner concedes that Rappaport *et al.* does not specifically disclose a packet network and an optical network, but in paragraph [0093] Rappaport *et al.* "mentions packets and optical frequency bands and protocols".

Applicant submits that paragraph [0093] in particular discloses:

> the present invention performs comparisons and provides novel displays for comparing the results of different network system performance prediction results, whereby each collection of network system performance prediction results performed throughout a part of the modeled environment is called a prediction run, where a prediction run is a collection of one or more predicted values at points or grids or volumes over space that are produced from one or more modeled communication network(s) simulated in the prediction engine, but which may be simulated multiple times to produce different resulting prediction runs that may be compared, using the same or different frequencies, using the same or different operational modes (where different operational modes may include, but not be limited to, one or more of the following: different data transmission rates, different packet sizes, different modulation techniques, different power levels,

different pseudo-noise code sequencing, different pseudo-noise code chip timing, different optical frequency bands, different network protocols, different bandwidths, different multiple-access techniques, different antenna distribution systems, different antenna systems, different wiring architectures, different cabling methods or system distribution methods, different physical interconnections of system components to comprise the communication system, or different source or error correction coding methods), or under different traffic loading conditions (due to bandwidth variations, user density, or some other means that causes traffic flow or capacity to change over time).

Applicant submits that Rappaport *et al.* is directed to "visualizing and efficiently making comparisons of communication system performance using predicted performance, measured performance, or other performance data as described. ... The method enables a design engineer to visually compare the performance of wireless communication systems as a three-dimensional region of fluctuating elevation, color, or other aesthetic characteristics with fully selectable display parameters, overlaid with the three-dimensional site-specific computer model for which the design was carried out" (abstract of Rappaport *et al.*). Applicant submits that the Examiner is simply using Rappaport *et al.* as a disclosure of simulating a network, but that the simulating is directed to an area unrelated to the present invention.

The Examiner alleges that Ghani *et al.* in Figure 2 discloses a network comprised of a packet network and an optical network and in Figure 3 shows inputs which determine characteristics of the network. Ghani *et al.* describes the operation and management of IP internetworking and an optical layer. Ghani *et al.* describes route provisioning algorithms for routing to ensure that channel qualities are met (page 75 of Ghani *et al.* first paragraph). Therefore, Applicant submits that Ghani *et al.* is not directed to co-modelling of a packet network and an optical network.

Ghani *et al.* does not disclose generating either "generating a basic packet capacity comprising a capacity value for each packet link based on packet network topology information and packet traffic information" and "generating a basic optical capacity comprising a capacity value for each optical link based on optical network topology information and the basic packet

capacity" as, with respect, Ghani *et al.* is not directed to co-modelling a simulated packet network and a simulated optical network. Instead, Ghani *et al.* is directed to strategies for routing and wavelength assignment (RWA). The disclosure of Ghani *et al.* is intended to be used in an actual network topology for routing data. On the other hand, the subject matter of the claims of the present application is directed to use with simulated packet network and the simulated optical network over which the simulated packet network operates. As such, the subject matter of the present application can be used for planning and designing packet networks to define and analyze the capacities that can/should be used over respective links of a network that is being simulated. Applicant submits that the use of the expressions "co-modelling", "simulated packet network", "simulated optical network" clearly indicate that the subject matter of the present claims is directed to generating values, i.e. a basic packet capacity and a basic optical capacity, for a representation of a network, not for use in dynamic path routing of data packets in actual operation of a network.

For at least the above reasons, Applicant submits that the combination of Rappaport *et al.* and Ghani *et al.* do not disclose all the limitations of claim 1. As such, the Examiner has failed to satisfy the requirement that all limitations must be disclosed by the cited reference, as is necessary to establish a *prima facie* case of obviousness.

Explanation to support an obviousness rejection

As noted above, for the Patent Office to properly combine references in support of an obviousness rejection, the Patent Office must identify a reason why a person of ordinary skill in the art would have sought to combine the respective teachings of the applied references. Applicant appreciates that the Examiner has articulated a reason why the claimed invention would have been obvious. However, for reasons detailed below, the Examiner's articulated reason can not be regarded as being valid.

The alleged motivation for combining Rappaport *et al.* and Ghani *et al.* with regard to claim 1, as set out on page 4 of the present Office Action, is tied to the Examiner's view that Rappaport *et al.* and Ghani *et al.* are equivalent to particular limitations of the claim. As detailed

above, this is an incorrect characterization of Rappaport *et al.* and Ghani *et al.* respectively, and as such this renders defective the motivation to combine argument.

Furthermore, Applicant submits that whereas Ghani *et al.* discloses a manner of routing and wavelength assignment (RWA) for use in normal operation of an existing network, one would not use such optimization techniques in co-modelling a packet network and an optical network, as the end result of the two processes is directed to a different outcome.

Claims 2 to 4 are dependent upon claim 1. Claim 11 is dependent upon claim 8. Claims 7 to 20, 24, 25 and 27 recite similar subject matter to claims 1 to 4, 8 and 11 in the form of computer readable medium claims, and are likewise submitted to patentably distinguish over the combination of Rappaport *et al.* and Ghani *et al.*

On these basis the Examiner is respectfully requested to withdraw the rejection of 1 to 4, 8, 11, 17 to 20, 24, 25 and 27 under 35 U.S.C. 103(a).

In view of the foregoing, early favourable consideration of this application is earnestly solicited.

Respectfully submitted,

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